Automated Setup & Installation Guide for Hadoop Single Node Cluster Environment (Pseudo Distributed mode) using light-weight script with Spark/Cassandra/MongoDB

Version :- 2020V2

Developed & Tested

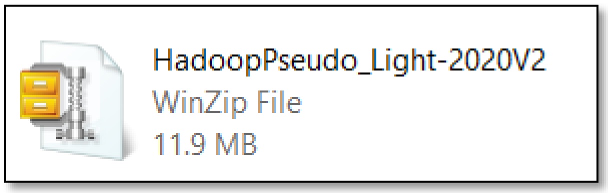
by

RAJU CHAL

Context:-

We will be using automated script for installation & configurations of "Hadoop/Spark Single Node Cluster" on Laptop /Desktop using light-weight script shared with you .

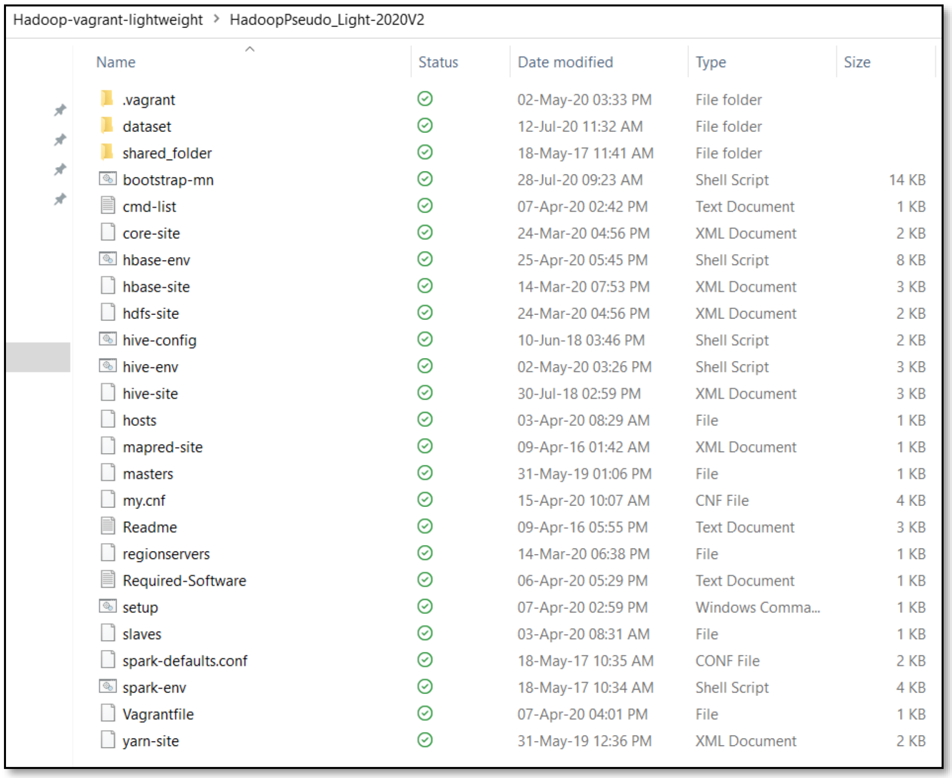
Script:-



HadoopPseudo_Light-2020V2
WinZip File
11.9 MB

File Name :-   HadoopPseudo_Light-2020V2.zip

Contents of script :-



Hadoop-vagrant-lightweight > HadoopPseudo_Light-2020V2

Name	Status	Date modified	Type	Size
.vagrant	✓	02-May-20 03:33 PM	File folder	
dataset	✓	12-Jul-20 11:32 AM	File folder	
shared_folder	✓	18-May-17 11:41 AM	File folder	
bootstrap-mn	✓	28-Jul-20 09:23 AM	Shell Script	14 KB
cmd-list	✓	07-Apr-20 02:42 PM	Text Document	1 KB
core-site	✓	24-Mar-20 04:56 PM	XML Document	2 KB
hbase-env	✓	25-Apr-20 05:45 PM	Shell Script	8 KB
hbase-site	✓	14-Mar-20 07:53 PM	XML Document	3 KB
hdfs-site	✓	24-Mar-20 04:56 PM	XML Document	2 KB
hive-config	✓	10-Jun-18 03:46 PM	Shell Script	2 KB
hive-env	✓	02-May-20 03:26 PM	Shell Script	3 KB
hive-site	✓	30-Jul-18 02:59 PM	XML Document	3 KB
hosts	✓	03-Apr-20 08:29 AM	File	1 KB
mapred-site	✓	09-Apr-16 01:42 AM	XML Document	1 KB
masters	✓	31-May-19 01:06 PM	File	1 KB
my.cnf	✓	15-Apr-20 10:07 AM	CNF File	4 KB
Readme	✓	09-Apr-16 05:55 PM	Text Document	3 KB
regionservers	✓	14-Mar-20 06:38 PM	File	1 KB
Required-Software	✓	06-Apr-20 05:29 PM	Text Document	1 KB
setup	✓	07-Apr-20 02:59 PM	Windows Comma...	1 KB
slaves	✓	03-Apr-20 08:31 AM	File	1 KB
spark-defaults.conf	✓	18-May-17 10:35 AM	CONF File	2 KB
spark-env	✓	18-May-17 10:34 AM	Shell Script	4 KB
Vagrantfile	✓	07-Apr-20 04:01 PM	File	1 KB
yarn-site	✓	31-May-19 12:36 PM	XML Document	2 KB

Software with version to be installed

Software	**Version**
Hadoop	2.9.2
Spark	2.4.5
Sbt	1.2.0
Hive	2.3.7
Pig	0.16.0
Cassandra	3.0.20
MongoDB	4.0.9
Sqoop	1.4.7
HBase	1.6.0
Kafka	2.4.1
Scala	2.12.2
JDK	8u131
MySQL	5.7
Python	3.6

Download & Install the pre-requisite software

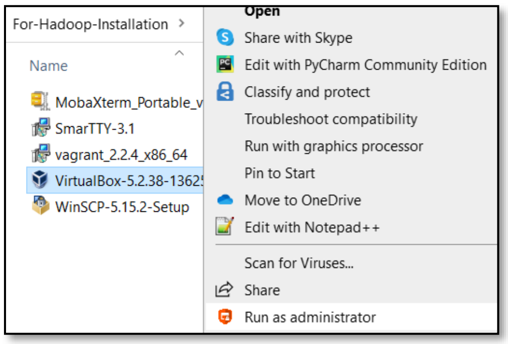
Pre-requisite:-

- **During entire installation procedure your Laptop/Desktop should be connected with Internet.**
- **Minimum RAM required:- 8 GB**

1) Download and Install Oracle Virtual Box

https://download.virtualbox.org/virtualbox/5.2.38/VirtualBox-5.2.38-136252-Win.exe

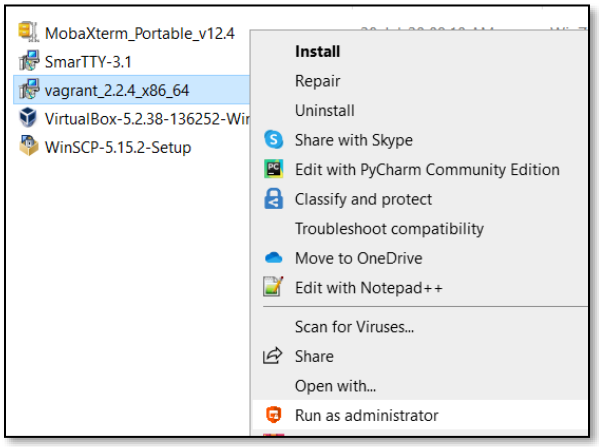
Right click on downloaded software → click on "Run as administrator"



2) Download and Install Vagrant version 2.2.4

https://releases.hashicorp.com/vagrant/2.2.4/vagrant_2.2.4_x86_64.msi

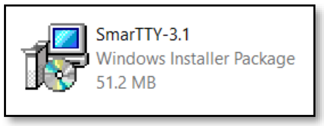
Right click on downloaded software → click on "Run as administrator"



After installation "RESTART" the system

3) Download SmarTTY

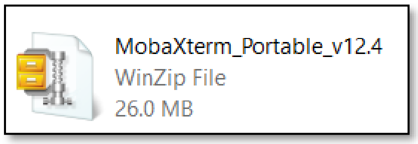
http://sysprogs.com/getfile/409/SmarTTY-3.1.msi


SmarTTY-3.1
Windows Installer Package
51.2 MB

OR

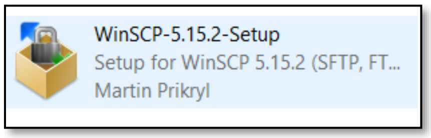
Download MobaXTerm

https://download.mobatek.net/2012020021813110/MobaXterm_Portable_v20.1.zip


MobaXterm_Portable_v12.4
WinZip File
26.0 MB

4) Download WinSCP

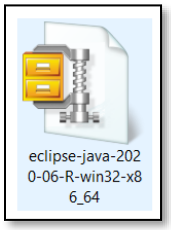
https://winscp.net/eng/download.php


WinSCP-5.15.2-Setup
Setup for WinSCP 5.15.2 (SFTP, FT...
Martin Prikryl

5) Eclipse Download (OPTIONAL)

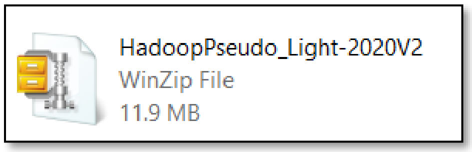
https://ftp.yz.yamagata-u.ac.jp/pub/eclipse//technology/epp/downloads/release/2020-06/R/eclipse-java-2020-06-R-win32-x86_64.zip

unzip and run it


eclipse-java-2020-06-R-win32-x86_64

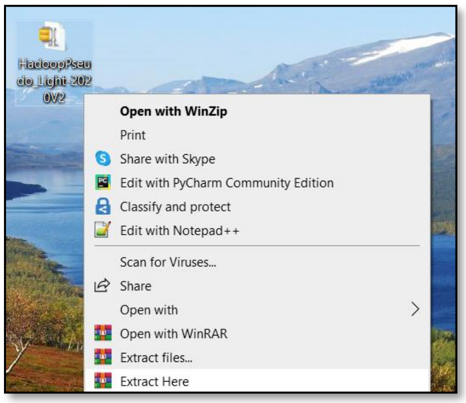
Installation Process

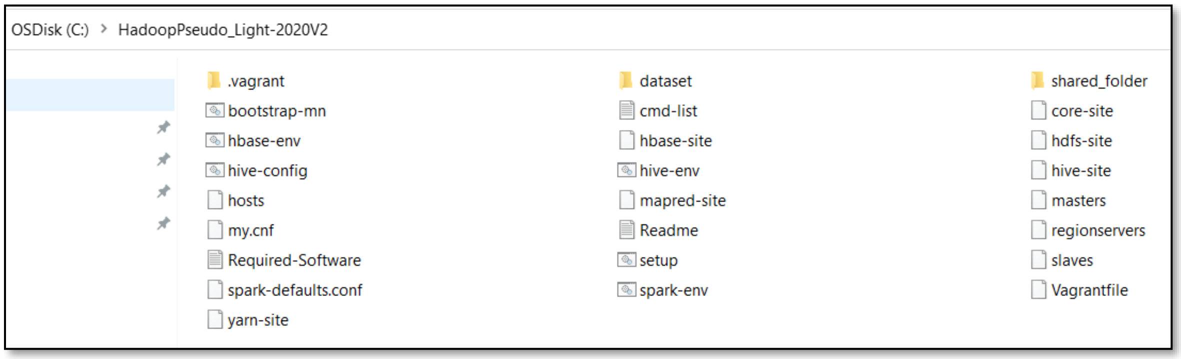
1. Download the shared zip file - **`HadoopPseudo_Light-2020V2.zip`**



HadoopPseudo_Light-2020V2
WinZip File
11.9 MB

2. Unzip it → Right click on the ZIP file →Click on "Extract Here" → copy the extracted root folder to C-Drive

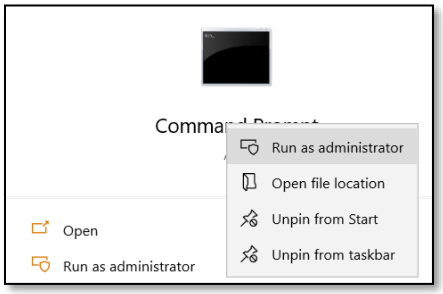




OSDisk (C:) > HadoopPseudo_Light-2020V2

.vagrant	dataset	shared_folder
bootstrap-mn	cmd-list	core-site
hbase-env	hbase-site	hdfs-site
hive-config	hive-env	hive-site
hosts	mapred-site	masters
my.cnf	Readme	regionservers
Required-Software	setup	slaves
spark-defaults.conf	spark-env	Vagrantfile
yarn-site		

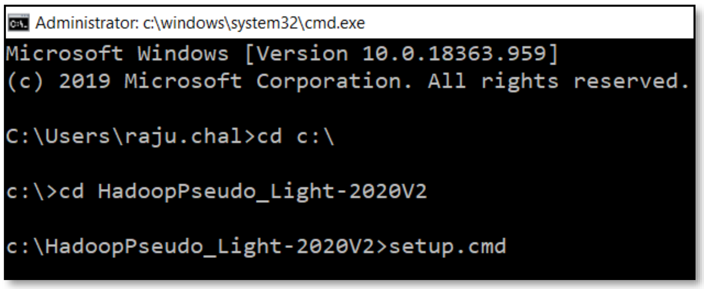
3. Open **command prompt** of Windows in **Administrator** mode



4. Change the directory to the extracted folder **HadoopPseudo_Light-2020V2 → run "setup.cmd" command**

```
C:\Users\raju.chal>cd c:\

c:\>cd HadoopPseudo_Light-2020V2
```

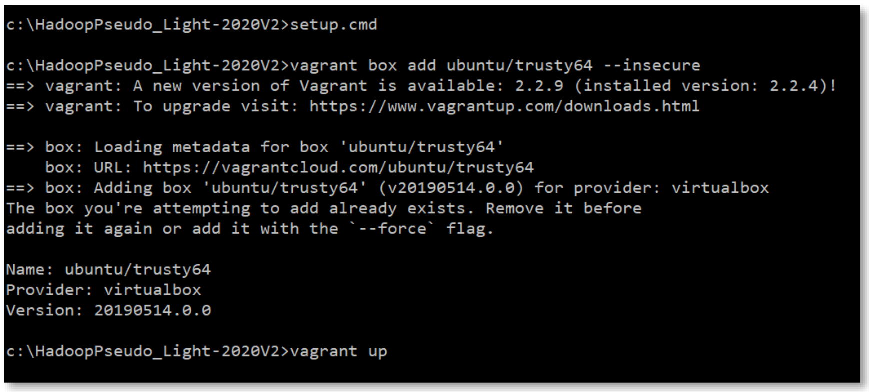
```
c:\HadoopPseudo_Light-2020V2>setup.cmd
```



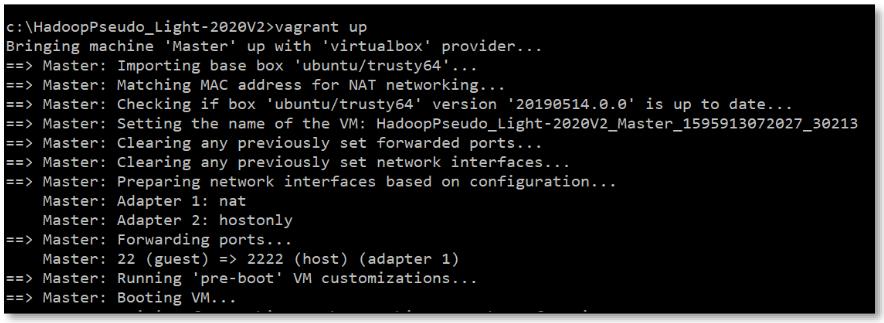
```
Administrator: c:\windows\system32\cmd.exe
Microsoft Windows [Version 10.0.18363.959]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\raju.chal>cd c:\

c:\>cd HadoopPseudo_Light-2020V2

c:\HadoopPseudo_Light-2020V2>setup.cmd
```

Wait till you get back the Command Prompt [`c:\HadoopPseudo_Light-2020V2>`]

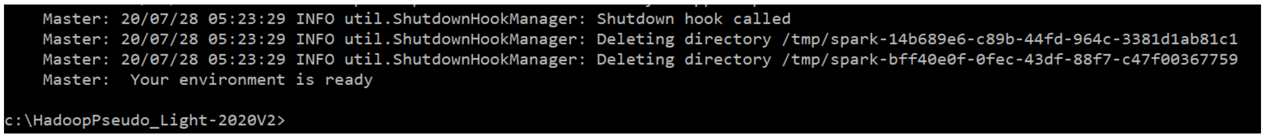
Depending on the bandwidth total installation may take 45 mins to 1 hr time



```
c:\HadoopPseudo_Light-2020V2>setup.cmd

c:\HadoopPseudo_Light-2020V2>vagrant box add ubuntu/trusty64 --insecure
==> vagrant: A new version of Vagrant is available: 2.2.9 (installed version: 2.2.4)!
==> vagrant: To upgrade visit: https://www.vagrantup.com/downloads.html

==> box: Loading metadata for box 'ubuntu/trusty64'
    box: URL: https://vagrantcloud.com/ubuntu/trusty64
==> box: Adding box 'ubuntu/trusty64' (v20190514.0.0) for provider: virtualbox
The box you're attempting to add already exists. Remove it before
adding it again or add it with the `--force` flag.

Name: ubuntu/trusty64
Provider: virtualbox
Version: 20190514.0.0

c:\HadoopPseudo_Light-2020V2>vagrant up
```



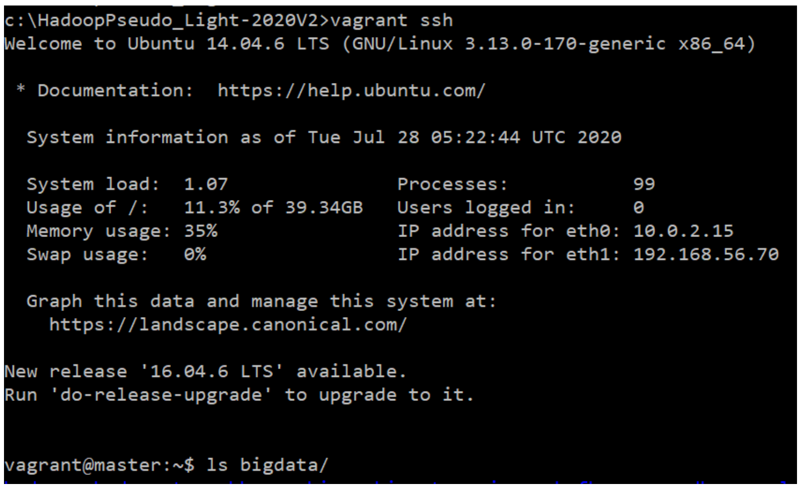
```
c:\HadoopPseudo_Light-2020V2>vagrant up
Bringing machine 'Master' up with 'virtualbox' provider...
==> Master: Importing base box 'ubuntu/trusty64'...
==> Master: Matching MAC address for NAT networking...
==> Master: Checking if box 'ubuntu/trusty64' version '20190514.0.0' is up to date...
==> Master: Setting the name of the VM: HadoopPseudo_Light-2020V2_Master_1595913072027_30213
==> Master: Clearing any previously set forwarded ports...
==> Master: Clearing any previously set network interfaces...
==> Master: Preparing network interfaces based on configuration...
    Master: Adapter 1: nat
    Master: Adapter 2: hostonly
==> Master: Forwarding ports...
    Master: 22 (guest) => 2222 (host) (adapter 1)
==> Master: Running 'pre-boot' VM customizations...
==> Master: Booting VM...
```



```
    Master: 20/07/28 05:23:29 INFO util.ShutdownHookManager: Shutdown hook called
    Master: 20/07/28 05:23:29 INFO util.ShutdownHookManager: Deleting directory /tmp/spark-14b689e6-c89b-44fd-964c-3381d1ab81c1
    Master: 20/07/28 05:23:29 INFO util.ShutdownHookManager: Deleting directory /tmp/spark-bff40e0f-0fec-43df-88f7-c47f00367759
    Master:  Your environment is ready

c:\HadoopPseudo_Light-2020V2>
```

5. After getting back the Command Prompt type "**vagrant ssh**" to login to Linux Box

```
C:\HadoopPseudo_Light-2020v2>vagrant ssh
```

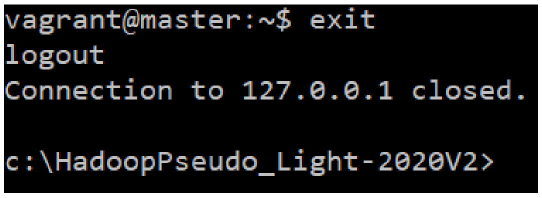


```
c:\HadoopPseudo_Light-2020V2>vagrant ssh
Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-170-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

  System information as of Tue Jul 28 05:22:44 UTC 2020

  System load:  1.07               Processes:           99
  Usage of /:   11.3% of 39.34GB   Users logged in:     0
  Memory usage: 35%                IP address for eth0: 10.0.2.15
  Swap usage:   0%                 IP address for eth1: 192.168.56.70

  Graph this data and manage this system at:
    https://landscape.canonical.com/

New release '16.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


vagrant@master:~$ ls bigdata/
```

```
vagrant@master:~$ jps
```

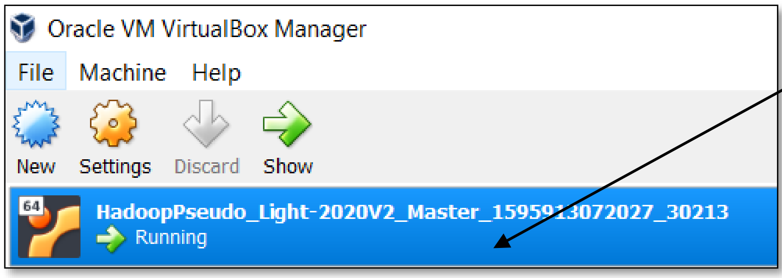
11538 Jps
9716 DataNode
9942 SecondaryNameNode
10520 Master
9528 NameNode
10107 ResourceManager
10446 NodeManager
10750 Worker

```
vagrant@master:~$
```



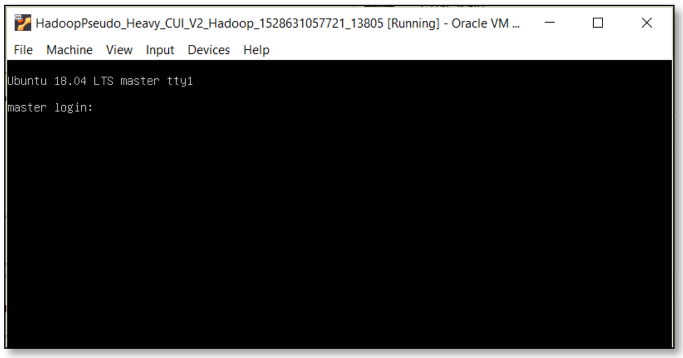
```
vagrant@master:~$ exit
logout
Connection to 127.0.0.1 closed.

c:\HadoopPseudo_Light-2020V2>
```

6. Open the **Oracle VirtualBox** that you have already installed, you will observe one Linux machine is running as shown below


Oracle VM VirtualBox Manager
File Machine Help
New Settings Discard Show
HadoopPseudo_Light-2020V2_Master_1595913072027_30213
Running

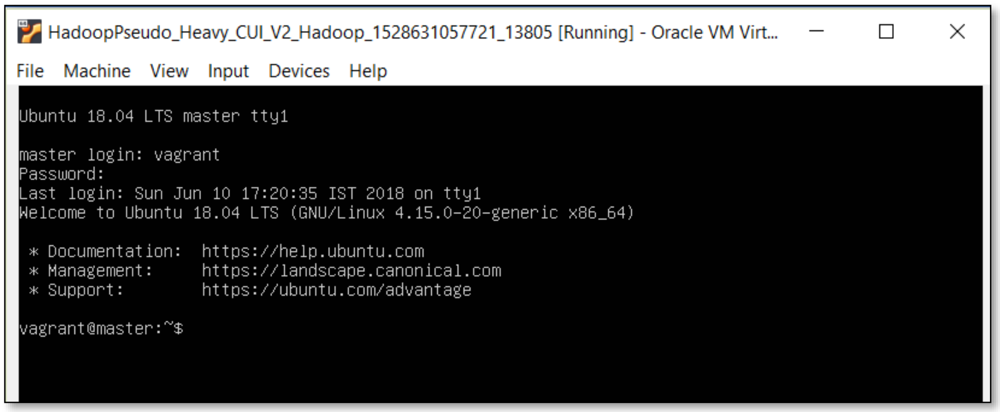
Note :- If it is not able to start, then - > You need to **enable Virtualization** on your laptop/desktop to create a virtualized environment on your desktop. The steps for the same depend on your laptop/desktop model. You should take help from Tech Support

6. Select the Linux box and click on the **Show** button in the toolbar, you will be getting the following screen


HadoopPseudo_Heavy_CUI_V2_Hadoop_1528631057721_13805 [Running] - Oracle VM ...
File Machine View Input Devices Help

```
Ubuntu 18.04 LTS master tty1

master login:
```

Login name :- vagrant
Password :- vagrant

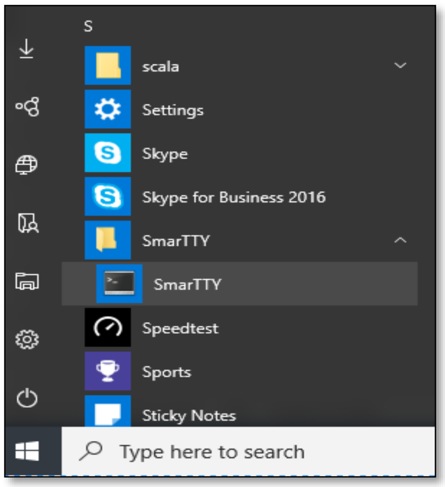

HadoopPseudo_Heavy_CUI_V2_Hadoop_1528631057721_13805 [Running] - Oracle VM Virt...
File Machine View Input Devices Help

```
Ubuntu 18.04 LTS master tty1

master login: vagrant
Password:
Last login: Sun Jun 10 17:20:35 IST 2018 on tty1
Welcome to Ubuntu 18.04 LTS (GNU/Linux 4.15.0-20-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

vagrant@master:~$
```

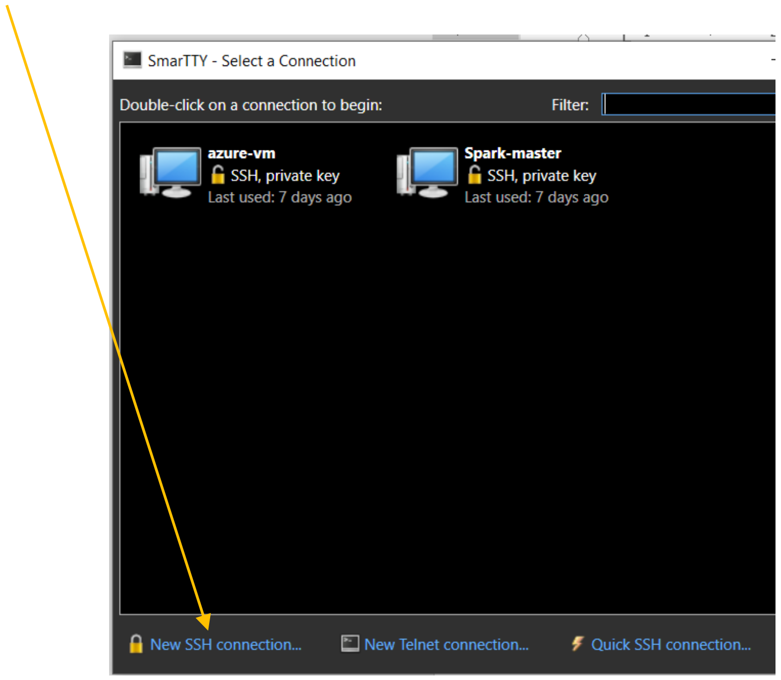
Connecting SmarTTY with the Linux Node

1. **Install SmarTTY.**
   a. **SmarTTY is a free multi-tabbed SSH client that supports copying files and directories with SCP on-the-fly and editing files in-place.**

2. **To Connect SMartTTY with Hadoop Node , click on SmartTTy menu ,**



3. **Click on "New SSH Connection "**


SmarTTY - Select a Connection

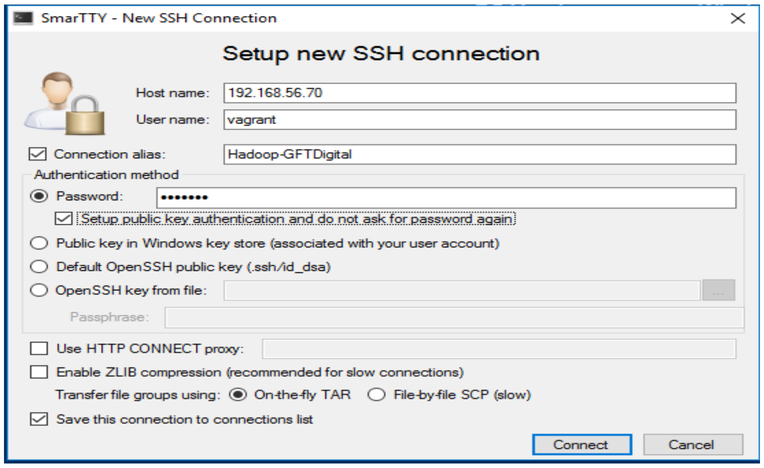
Double-click on a connection to begin:

Filter:

azure-vm
SSH, private key
Last used: 7 days ago

Spark-master
SSH, private key
Last used: 7 days ago

4. **Fill the dialog box with the following information as shown below**


SmarTTY - New SSH Connection

Setup new SSH connection

Host name: 192.168.56.70

User name: vagrant

[✓] Connection alias: Hadoop-GFTDigital

Authentication method

[● Password]: •••••••

[✓] Setup public key authentication and do not ask for password again

○ Public key in Windows key store (associated with your user account)

○ Default OpenSSH public key (.ssh/id_dsa)

○ OpenSSH key from file:

Passphrase:

☐ Use HTTP CONNECT proxy:

☐ Enable ZLIB compression (recommended for slow connections)

Transfer file groups using: [● On-the-fly TAR] ○ File-by-file SCP (slow)

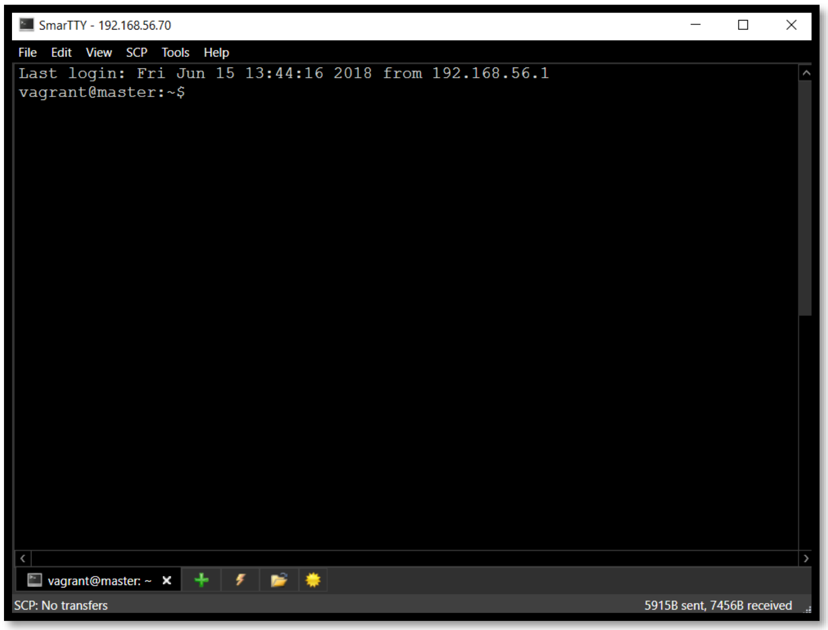
[✓] Save this connection to connections list

Host Name :- 192.168.56.70

User Name :- vagrant

Password :- vagrant

Click on “Connect”



```
Last login: Fri Jun 15 13:44:16 2018 from 192.168.56.1
vagrant@master:~$
```

SCP: No transfers 5915B sent, 7456B received

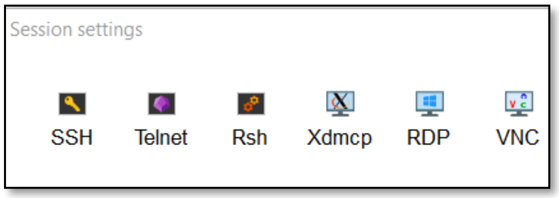
You can open Multiple TAB connected with the Linux Node.

Now your Hadoop/Spark environment is ready .

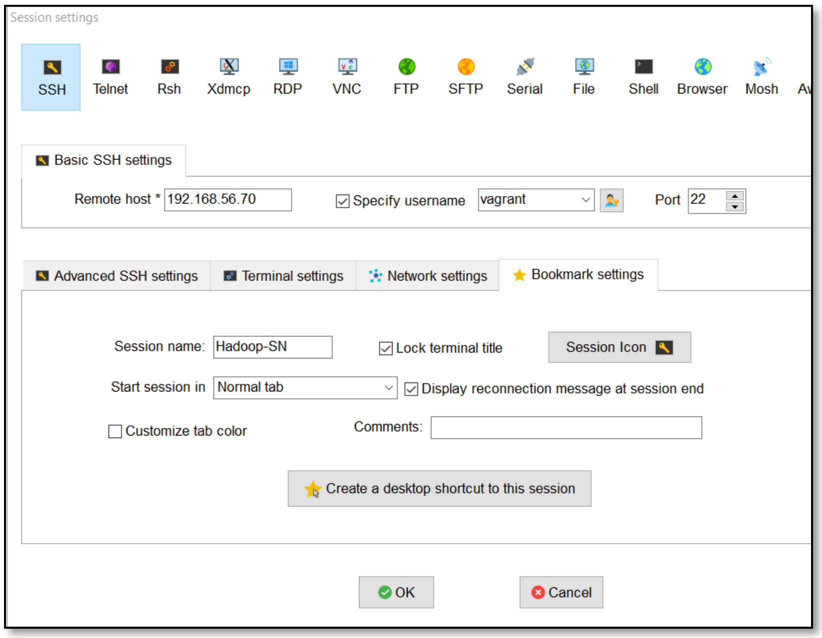
Connecting MobaXTerm with the Linux Node

1. Open **MobaXTerm**

Tool Bar → Click on "SSH" button → Click on "SSH" button



2. Fill the dialog box with the following information as shown below



Session settings

Basic SSH settings

Remote host * 192.168.56.70 ☑ Specify username vagrant Port 22

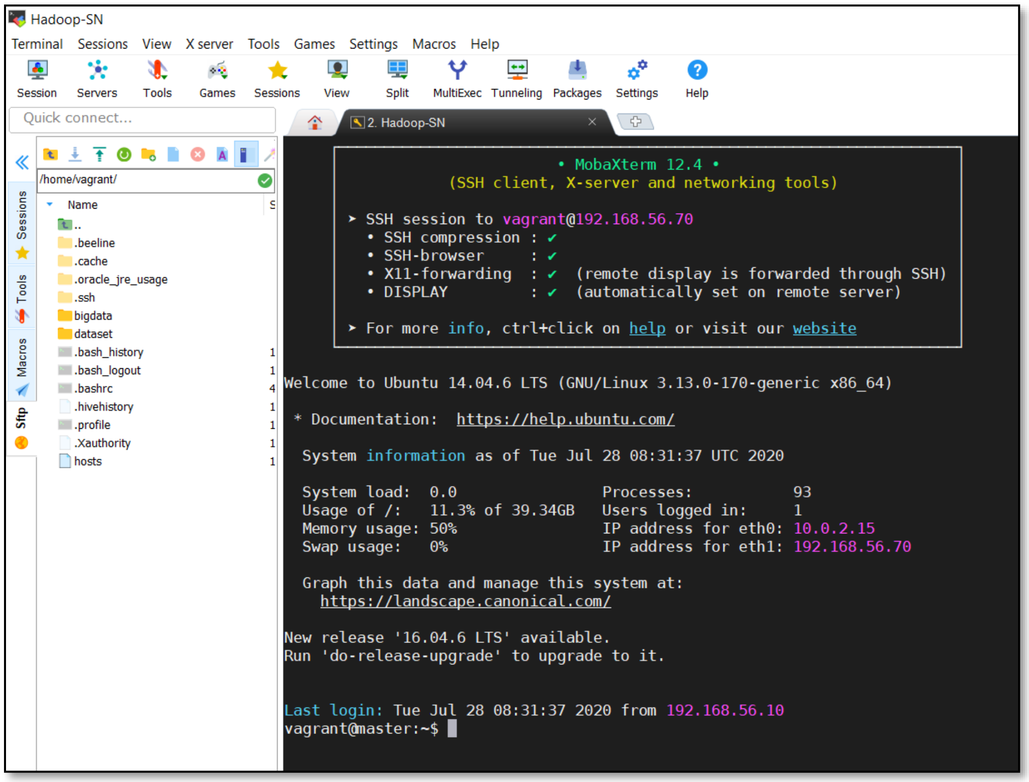
Bookmark settings

Session name: Hadoop-SN ☑ Lock terminal title

Start session in Normal tab ☑ Display reconnection message at session end

☐ Customize tab color Comments:

Click on "OK"

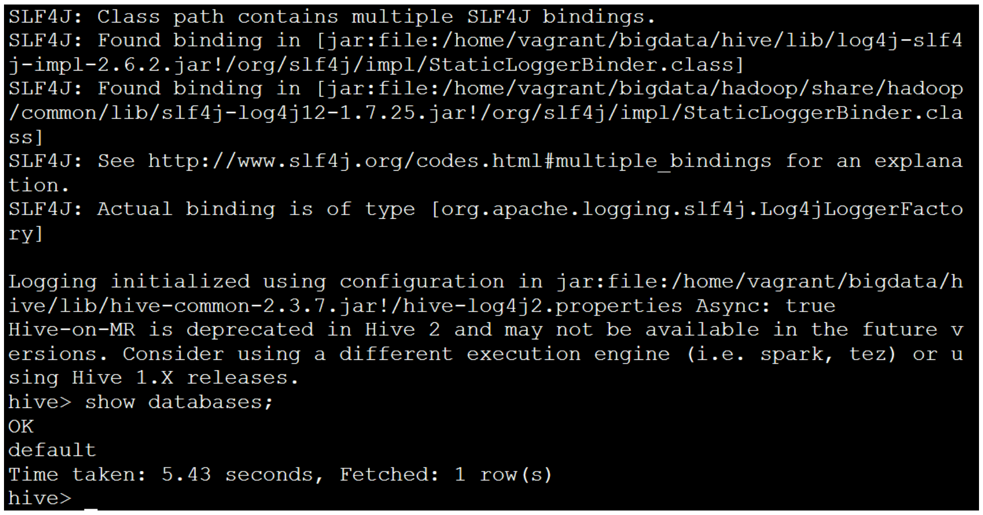


```
              • MobaXterm 12.4 •
       (SSH client, X-server and networking tools)

 ➤ SSH session to vagrant@192.168.56.70
   • SSH compression : ✔
   • SSH-browser     : ✔
   • X11-forwarding  : ✔  (remote display is forwarded through SSH)
   • DISPLAY         : ✔  (automatically set on remote server)

 ➤ For more info, ctrl+click on help or visit our website

Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-170-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

  System information as of Tue Jul 28 08:31:37 UTC 2020

  System load:  0.0               Processes:           93
  Usage of /:   11.3% of 39.34GB  Users logged in:     1
  Memory usage: 50%               IP address for eth0: 10.0.2.15
  Swap usage:   0%                IP address for eth1: 192.168.56.70

  Graph this data and manage this system at:
    https://landscape.canonical.com/

New release '16.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Tue Jul 28 08:31:37 2020 from 192.168.56.10
vagrant@master:~$
```

Now your Hadoop/Spark environment is ready .

Check Hive Service

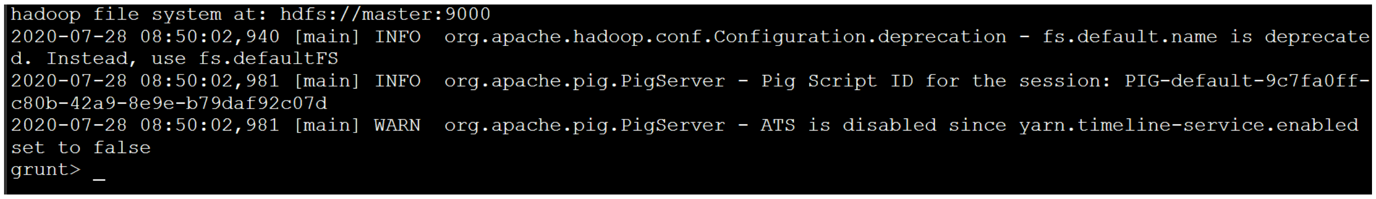
vagrant@master:~$ hive



```
SLF4J: Class path contains multiple SLF4J bindings.
SLF4J: Found binding in [jar:file:/home/vagrant/bigdata/hive/lib/log4j-slf4
j-impl-2.6.2.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: Found binding in [jar:file:/home/vagrant/bigdata/hadoop/share/hadoop
/common/lib/slf4j-log4j12-1.7.25.jar!/org/slf4j/impl/StaticLoggerBinder.cla
ss]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explana
tion.
SLF4J: Actual binding is of type [org.apache.logging.slf4j.Log4jLoggerFacto
ry]

Logging initialized using configuration in jar:file:/home/vagrant/bigdata/h
ive/lib/hive-common-2.3.7.jar!/hive-log4j2.properties Async: true
Hive-on-MR is deprecated in Hive 2 and may not be available in the future v
ersions. Consider using a different execution engine (i.e. spark, tez) or u
sing Hive 1.X releases.
hive> show databases;
OK
default
Time taken: 5.43 seconds, Fetched: 1 row(s)
hive> _
```

Check Pig Service

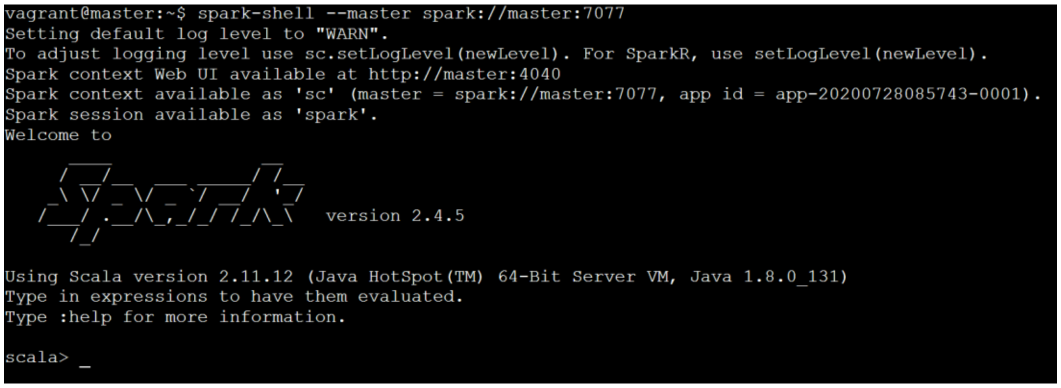
vagrant@master:~$ pig



```
hadoop file system at: hdfs://master:9000
2020-07-28 08:50:02,940 [main] INFO  org.apache.hadoop.conf.Configuration.deprecation - fs.default.name is deprecate
d. Instead, use fs.defaultFS
2020-07-28 08:50:02,981 [main] INFO  org.apache.pig.PigServer - Pig Script ID for the session: PIG-default-9c7fa0ff-
c80b-42a9-8e9e-b79daf92c07d
2020-07-28 08:50:02,981 [main] WARN  org.apache.pig.PigServer - ATS is disabled since yarn.timeline-service.enabled
set to false
grunt> _
```

Check Spark Service

vagrant@master:~$ spark-shell --master spark://master:7077



```
vagrant@master:~$ spark-shell --master spark://master:7077
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
Spark context Web UI available at http://master:4040
Spark context available as 'sc' (master = spark://master:7077, app id = app-20200728085743-0001).
Spark session available as 'spark'.
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /___/ .__/\_,_/_/ /_/\_\   version 2.4.5
      /_/

Using Scala version 2.11.12 (Java HotSpot(TM) 64-Bit Server VM, Java 1.8.0_131)
Type in expressions to have them evaluated.
Type :help for more information.

scala> _
```

Check PySpark Service

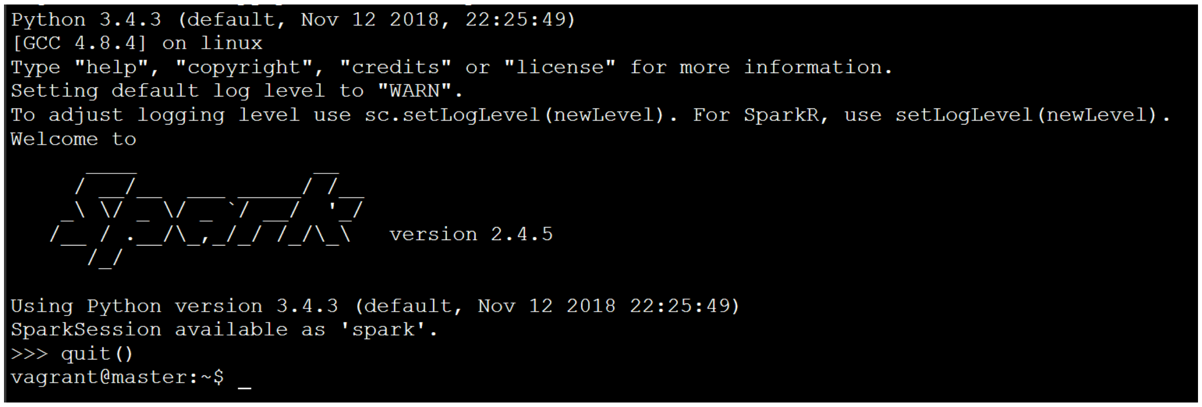
```
vagrant@master:~$ vi .bashrc
```

Add the following environment variable

```
export PYSPARK_PYTHON=python3.4
```

```
vagrant@master:~$ source .bashrc
```

```
vagrant@master:~$ pyspark --master spark://master:7077
```



```
Python 3.4.3 (default, Nov 12 2018, 22:25:49)
[GCC 4.8.4] on linux
Type "help", "copyright", "credits" or "license" for more information.
Setting default log level to "WARN".
To adjust logging level use sc.setLogLevel(newLevel). For SparkR, use setLogLevel(newLevel).
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /__ / .__/\_,_/_/ /_/\_\   version 2.4.5
      /_/

Using Python version 3.4.3 (default, Nov 12 2018 22:25:49)
SparkSession available as 'spark'.
>>> quit()
vagrant@master:~$ _
```

Shutdown the Node

If you want to shutdown your node completely ,

please type the following command in the **$** prompt (Either in Putty or in the Linux node directly).

```
$ sudo init 0
```

Your node will be shutdown.

Next time when you want to start it ,

- you have to open it from the **Oracle Virtual Box.**
- Select the node from the Oracle Virtual Box, click on the “**Start**” button .
- After the node has been started in the Virtual Box, connect it from windows using **Putty** .

Start the services again

For Hadoop (Mandatory)

```
$ start-dfs.sh
$ start-yarn.sh
```

For Hadoop (Optional)

```
$ mr-jobhistory-daemon.sh start historyserver
```

For Spark (Mandatory)

```
$ start-master.sh
$ start-slaves.sh
```

Check the services :-

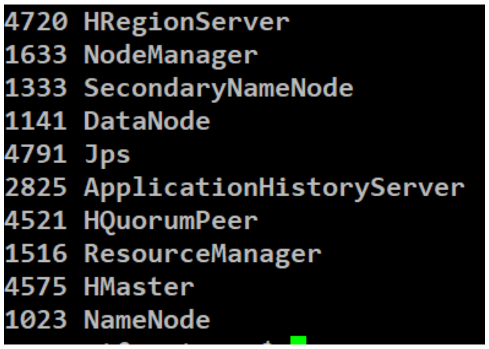
```
$ jps
```

Check HBase Services

To start the service

$ start-hbase.sh

vagrant@master:~$ jps



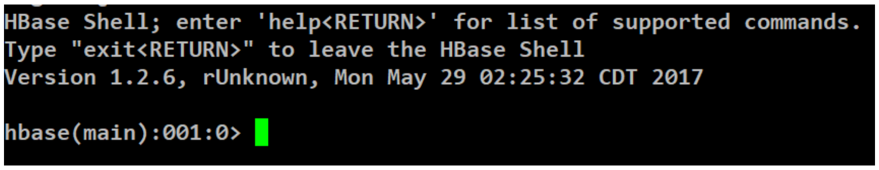
```
4720 HRegionServer
1633 NodeManager
1333 SecondaryNameNode
1141 DataNode
4791 Jps
2825 ApplicationHistoryServer
4521 HQuorumPeer
1516 ResourceManager
4575 HMaster
1023 NameNode
```

Web interface

http://192.168.56.70:16010

http://192.168.56.70:16030

vagrant@master:~$ hbase shell



```
HBase Shell; enter 'help<RETURN>' for list of supported commands.
Type "exit<RETURN>" to leave the HBase Shell
Version 1.2.6, rUnknown, Mon May 29 02:25:32 CDT 2017

hbase(main):001:0>
```

Test HBase

hbase(main):001:0> create 'test', 'cf'

0 row(s) in 6.2640 seconds

=> Hbase::Table - test

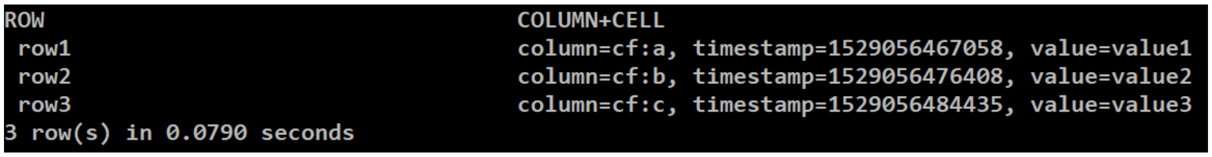
hbase(main):002:0> list

TABLE
test
1 row(s) in 0.4770 seconds

=> ["test"]

hbase(main):003:0> put 'test', 'row1', 'cf:a', 'value1'

```
0 row(s) in 1.6720 seconds

hbase(main):004:0> put 'test', 'row2', 'cf:b', 'value2'

0 row(s) in 0.0560 seconds

hbase(main):005:0> put 'test', 'row3', 'cf:c', 'value3'

0 row(s) in 0.2260 seconds

hbase(main):006:0> scan 'test'
```



```
ROW                                    COLUMN+CELL
 row1                                  column=cf:a, timestamp=1529056467058, value=value1
 row2                                  column=cf:b, timestamp=1529056476408, value=value2
 row3                                  column=cf:c, timestamp=1529056484435, value=value3
3 row(s) in 0.0790 seconds
```

To Stop the service

```
$ stop-hbase.sh
```

Check MySQL Services

```
vagrant@master:~$ mysql -u root -p

Enter password: root

mysql> show databases;

+--------------------+
| Database           |
+--------------------+
| information_schema |
| metastore_db       |
| mysql              |
| performance_schema |
+--------------------+
4 rows in set (0.24 sec)
```

Check Cassandra Services

Start Cassandra in the foreground by invoking

```
$ bin/cassandra -f
```

from the command line.

Press "Control-C" to stop Cassandra.

Start Cassandra in the background by invoking

```
$ bin/cassandra
```

from the command line.

To Stop Cassandra running in Background

Invoke

```
kill pid
```

or

```
pkill -f CassandraDaemon
```

to stop Cassandra, where pid is the Cassandra process id,

which you can find for example by invoking `pgrep -f CassandraDaemon`.

Verify that Cassandra is running

by invoking

```
bin/nodetool status
```

from the command line.

Configuration files are located in the conf sub-directory.

Due to this, it is necessary to either start Cassandra with root privileges or change **conf/cassandra.yaml**

CQLSH

cqlsh is a command line shell for interacting with Cassandra through CQL. It is shipped with every Cassandra package, and can be found in the **bin**/ directory alongside the **cassandra** executable. It connects to the single node specified on the command line.

For example:

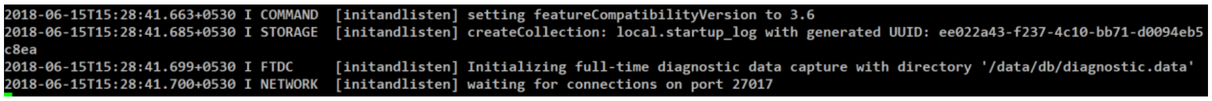
```
$ bin/cqlsh localhost
```

```
Connected to Test Cluster at localhost:9042.
[cqlsh 5.0.1 | Cassandra 3.8 | CQL spec 3.4.2 | Native protocol v4]
Use HELP for help.
cqlsh> SELECT cluster_name, listen_address FROM system.local;

 cluster_name | listen_address
--------------+----------------
 Test Cluster |      127.0.0.1

(1 rows)
cqlsh>
```

Check MongoDB Services

Start MongoDB server

```
$ mongod
```



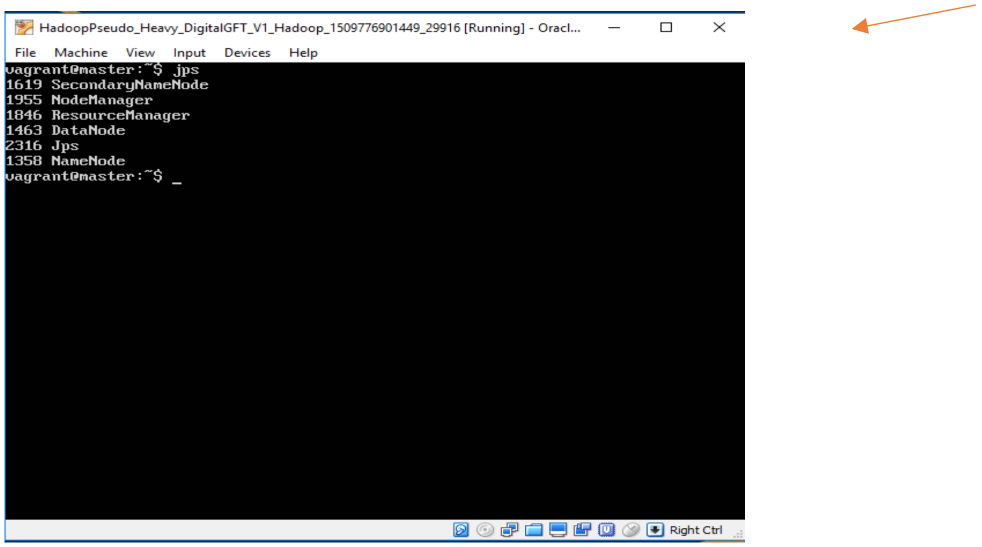
```
2018-06-15T15:28:41.663+0530 I COMMAND  [initandlisten] setting featureCompatibilityVersion to 3.6
2018-06-15T15:28:41.685+0530 I STORAGE  [initandlisten] createCollection: local.startup_log with generated UUID: ee022a43-f237-4c10-bb71-d0094eb5
c8ea
2018-06-15T15:28:41.699+0530 I FTDC     [initandlisten] Initializing full-time diagnostic data capture with directory '/data/db/diagnostic.data'
2018-06-15T15:28:41.700+0530 I NETWORK  [initandlisten] waiting for connections on port 27017
```

Start Mongo Shell in another TAB

```
$ mongo


>
```

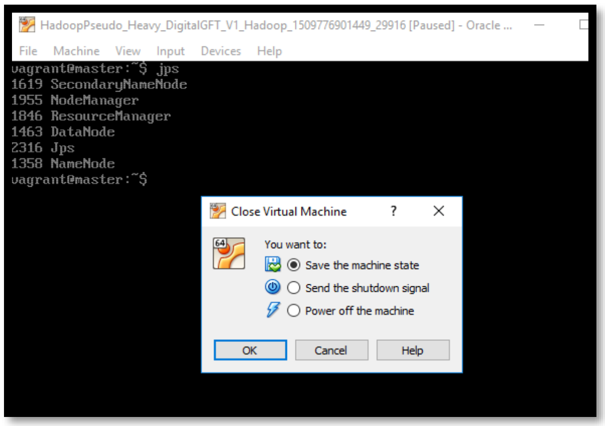
Suspend the Linux Node from Virtual Box

1. **Click on the "close" button of the Linux Window opened in Virtual Box**


HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop_1509776901449_29916 [Running] - Oracl...
File Machine View Input Devices Help
Right Ctrl

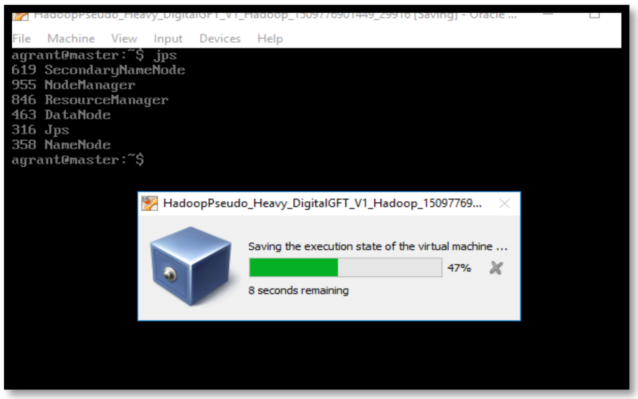
```
vagrant@master:~$ jps
1619 SecondaryNameNode
1955 NodeManager
1846 ResourceManager
1463 DataNode
2316 Jps
1358 NameNode
vagrant@master:~$ _
```

2. **It will open another dialog box asking about the operations of your choice , click on the choice "Save the machine state " →Click on "OK"**


HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop_1509776901449_29916 [Paused] - Oracle ...
File Machine View Input Devices Help
Close Virtual Machine
OK
Cancel
Help

```
vagrant@master:~$ jps
1619 SecondaryNameNode
1955 NodeManager
1846 ResourceManager
1463 DataNode
2316 Jps
1358 NameNode
vagrant@master:~$
```

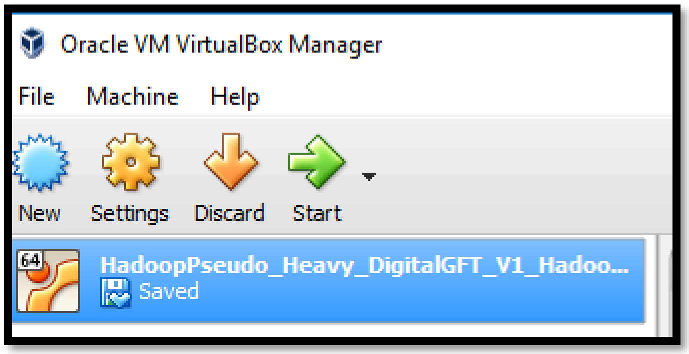
You want to:
[✓ Save the machine state]
Send the shutdown signal
Power off the machine


HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop_1509776901449_29916 [Saving] - Oracle ...
File Machine View Input Devices Help
HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop_15097769...

```
agrant@master:~$ jps
619 SecondaryNameNode
955 NodeManager
846 ResourceManager
463 DataNode
316 Jps
358 NameNode
agrant@master:~$
```

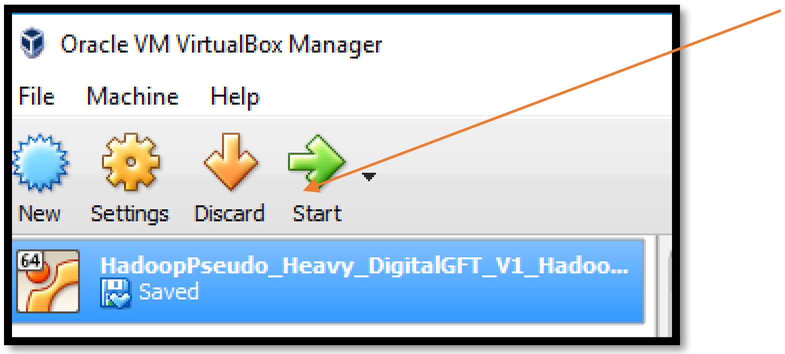
Saving the execution state of the virtual machine ...
47%
8 seconds remaining

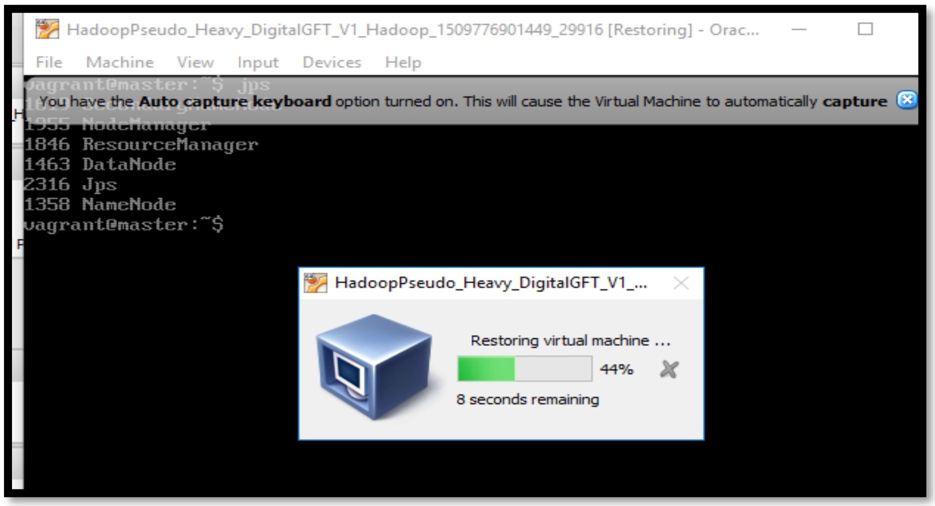
3. **In the Virtual Box window the Linux node will be shown in "SAVED" mode .**


Oracle VM VirtualBox Manager
File Machine Help
New Settings Discard Start
HadoopPseudo_Heavy_DigitalGFT_V1_Hadoo...
Saved

To start the Linux node from "saved" state

Select the Linux Node in the Virtual Box window (shown in "saved" mode) → click on "Start" button


Oracle VM VirtualBox Manager
File Machine Help
New Settings Discard Start
HadoopPseudo_Heavy_DigitalGFT_V1_Hadoo...
Saved

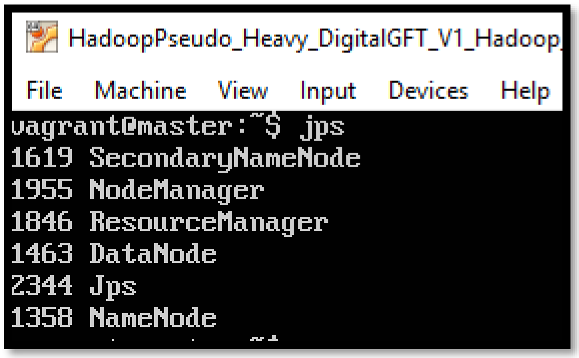

HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop_1509776901449_29916 [Restoring] - Orac...
File Machine View Input Devices Help
HadoopPseudo_Heavy_DigitalGFT_V1_...

You have the **Auto capture keyboard** option turned on. This will cause the Virtual Machine to automatically **capture**

```
vagrant@master:~$ jps
1955 NodeManager
1846 ResourceManager
1463 DataNode
2316 Jps
1358 NameNode
vagrant@master:~$
```

Restoring virtual machine ...
44%
8 seconds remaining

Check the "Hadoop Services" using "jps" command; if the services are not running , start the services using the following commands.


HadoopPseudo_Heavy_DigitalGFT_V1_Hadoop
File Machine View Input Devices Help

```
vagrant@master:~$ jps
1619 SecondaryNameNode
1955 NodeManager
1846 ResourceManager
1463 DataNode
2344 Jps
1358 NameNode
```

```
$ start-dfs.sh
$ start-yarn.sh
```

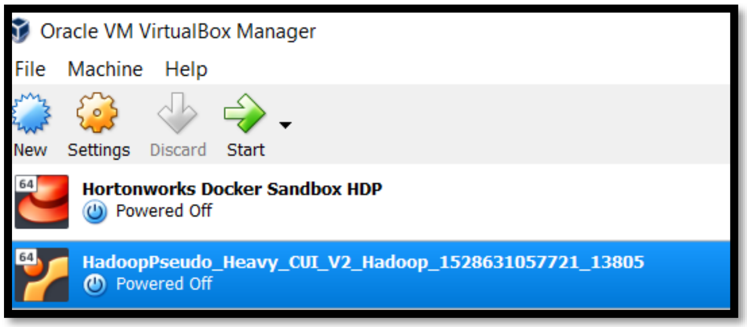
Shutdown the Node

To shutdown the Hadoop Node completely

Type the following command in the $ prompt (Either in Putty or in the Linux node directly).

$ sudo init 0

The node will be shutdown and it will shown as **"Powered Off" state** in the Virtual Box Window.

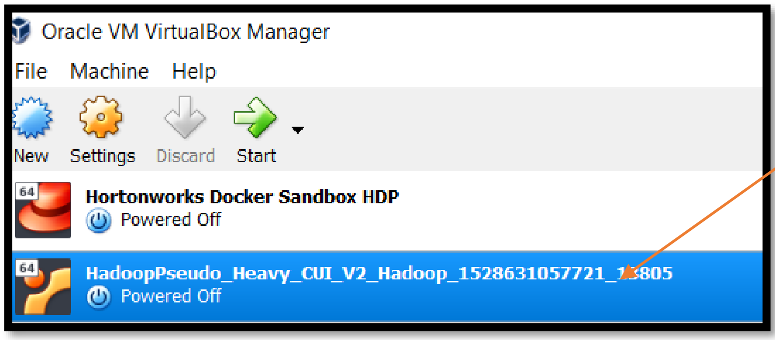


Hortonworks Docker Sandbox HDP
Powered Off

HadoopPseudo_Heavy_CUI_V2_Hadoop_1528631057721_13805
Powered Off

To Start the Hadoop Node from "Powered Off" state

- Open the **Oracle Virtual Box.**
- Select the node from the Oracle Virtual Box, click on the "**Start**" button .
- After the node has been started in the Virtual Box, connect it from windows using **Putty** or **SmarTTY**.



Hortonworks Docker Sandbox HDP
Powered Off
HadoopPseudo_Heavy_CUI_V2_Hadoop_1528631057721_13805
Powered Off

Start the services using the following commands: -

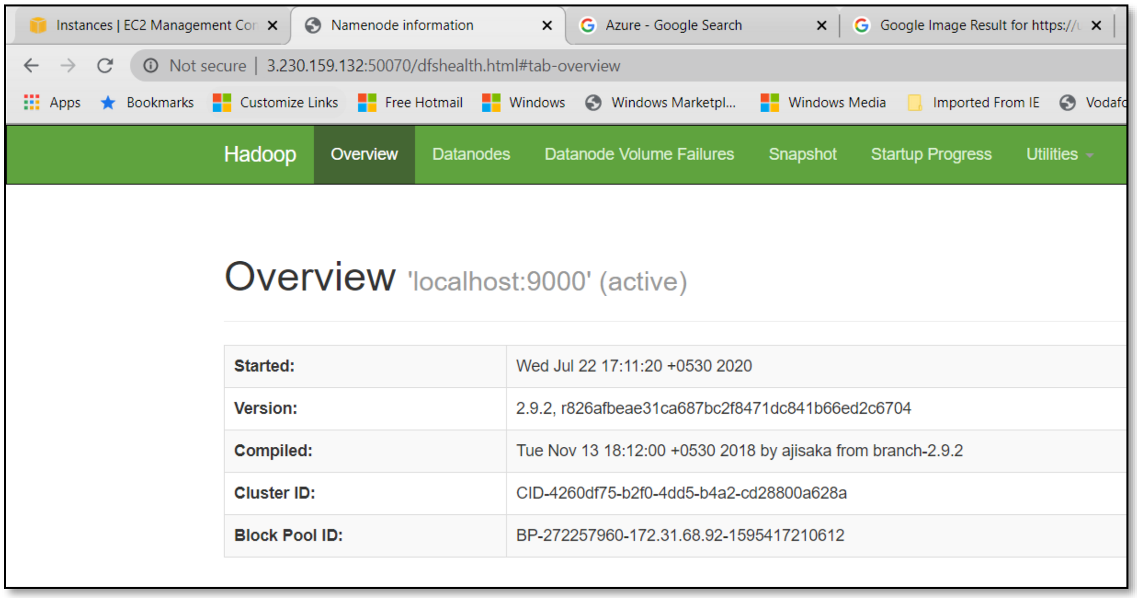
```
$ start-dfs.sh
$ start-yarn.sh
```

Check the services :-

```
$ jps
```

Check Namenode web interface

http://192.168.56.70:50070

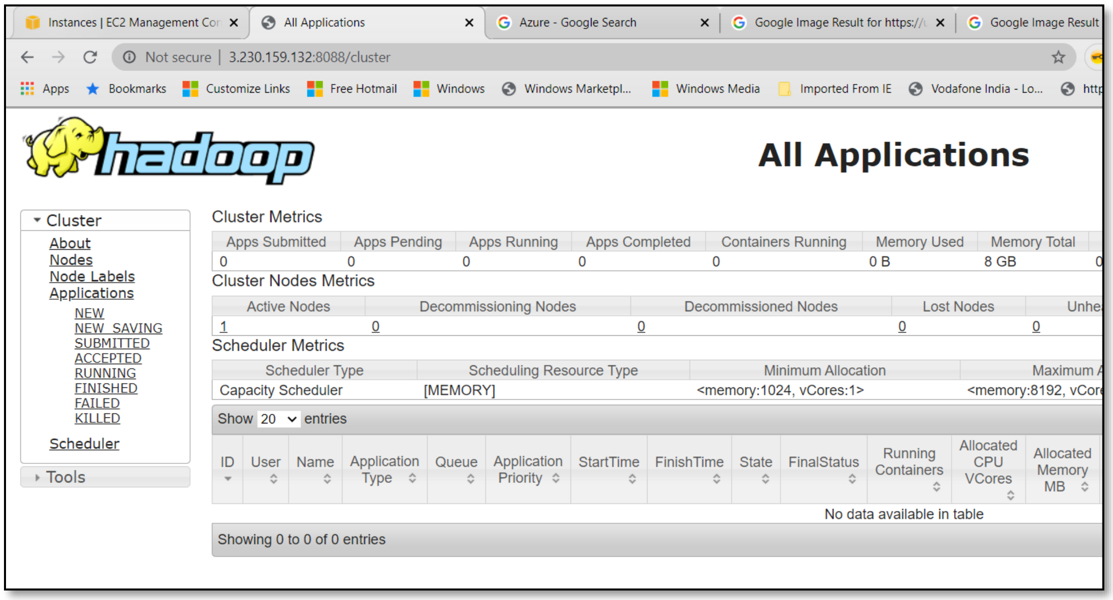

Instances | EC2 Management Cor
Namenode information
Azure - Google Search
Google Image Result for https://
Not secure | 3.230.159.132:50070/dfshealth.html#tab-overview
Apps Bookmarks Customize Links Free Hotmail Windows Windows Marketpl... Windows Media Imported From IE Vodafo
Hadoop Overview Datanodes Datanode Volume Failures Snapshot Startup Progress Utilities

Overview 'localhost:9000' (active)

Started:	Wed Jul 22 17:11:20 +0530 2020
Version:	2.9.2, r826afbeae31ca687bc2f8471dc841b66ed2c6704
Compiled:	Tue Nov 13 18:12:00 +0530 2018 by ajisaka from branch-2.9.2
Cluster ID:	CID-4260df75-b2f0-4dd5-b4a2-cd28800a628a
Block Pool ID:	BP-272257960-172.31.68.92-1595417210612

Check Resource Manager web interface

```
http://192.168.56.70:8088
```



Not secure | 3.230.159.132:8088/cluster

All Applications

Cluster: About, Nodes, Node Labels, Applications (NEW, NEW_SAVING, SUBMITTED, ACCEPTED, RUNNING, FINISHED, FAILED, KILLED), Scheduler

Tools

Cluster Metrics

Apps Submitted	Apps Pending	Apps Running	Apps Completed	Containers Running	Memory Used	Memory Total
0	0	0	0	0	0 B	8 GB

Cluster Nodes Metrics

Active Nodes	Decommissioning Nodes	Decommissioned Nodes	Lost Nodes	Unhe
1	0	0	0	0

Scheduler Metrics

Scheduler Type	Scheduling Resource Type	Minimum Allocation	Maximum A
Capacity Scheduler	[MEMORY]	<memory:1024, vCores:1>	<memory:8192, vCor

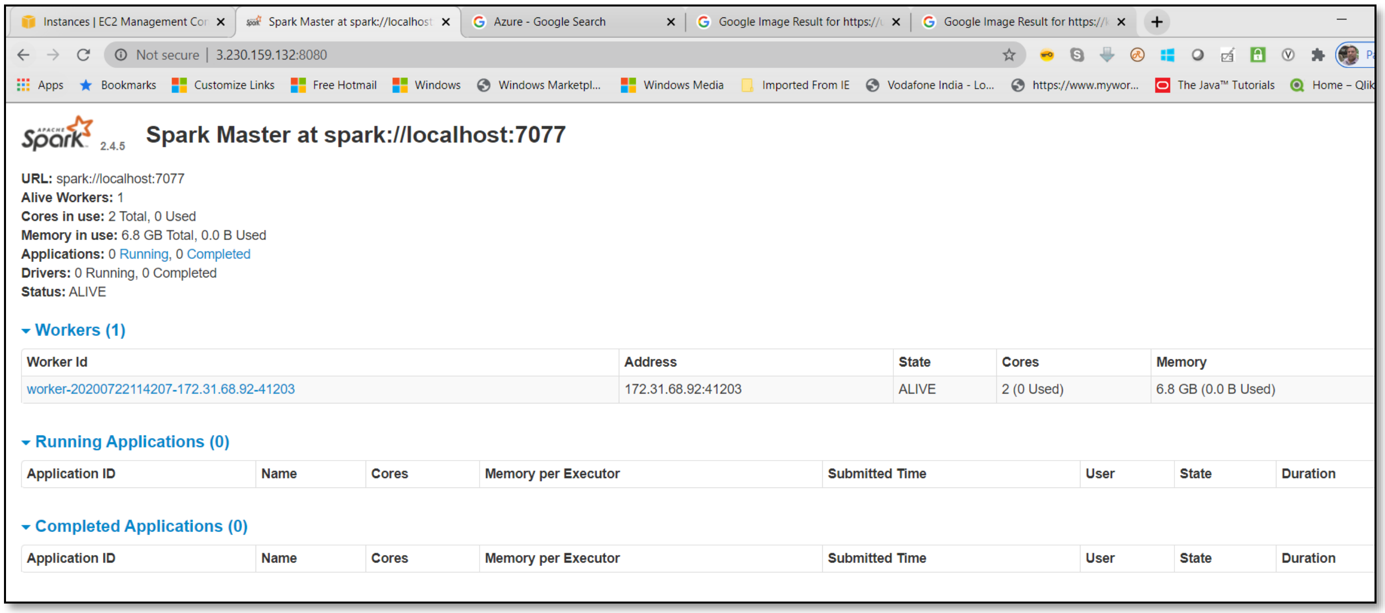
Show 20 entries

ID	User	Name	Application Type	Queue	Application Priority	StartTime	FinishTime	State	FinalStatus	Running Containers	Allocated CPU VCores	Allocated Memory MB
No data available in table												

Showing 0 to 0 of 0 entries

Check Spark Master web interface

```
http://192.168.56.70:8080
```



Not secure | 3.230.159.132:8080

2.4.5 **Spark Master at spark://localhost:7077**

URL: spark://localhost:7077
Alive Workers: 1
Cores in use: 2 Total, 0 Used
Memory in use: 6.8 GB Total, 0.0 B Used
Applications: 0 Running, 0 Completed
Drivers: 0 Running, 0 Completed
Status: ALIVE

Workers (1)

Worker Id	Address	State	Cores	Memory
worker-20200722114207-172.31.68.92-41203	172.31.68.92:41203	ALIVE	2 (0 Used)	6.8 GB (0.0 B Used)

Running Applications (0)

Application ID	Name	Cores	Memory per Executor	Submitted Time	User	State	Duration

Completed Applications (0)

Application ID	Name	Cores	Memory per Executor	Submitted Time	User	State	Duration

Happy Clustering